

Abstract Submitted
for the GEC15 Meeting of
The American Physical Society

NH₃ reforming by DBD using a H₂ permeable membrane YUKIO HAYAKAWA, SHINJI KAMBARA, Gifu Univ, TOMONORI MIURA, Sawafuji Electric Co., LTD., GIFU UNIV. TEAM, SAWAFUJI ELECTRIC CO., LTD. COLLABORATION — Ammonia is a hydrogen storage material that may solve several problems related to hydrogen transportation and storage in the hydrogen society. Catalytic thermal decomposition is a promising technique for producing hydrogen from ammonia. This study investigated atmospheric plasma decomposition as a new hydrogen production device. Therefore, it also observed that molecular ammonia was rapidly decomposed by electron energy in the plasma and was converted into molecular hydrogen. The hydrogen production was increased by the ammonia concentration, but hydrogen conversion was dramatically decreased to 13.9 %, so unreacted ammonia was existed. In order to improve these problems, we developed a new high voltage electrode which was equipped with a hydrogen permeable membrane. At the result, this device could make high purity hydrogen at room temperature and unreacted ammonia was removed.

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Date submitted: 21 Jun 2015

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